CLAIMS

1. A method of forming a conductive strap in a semiconductor device, the method comprising:

forming a semiconductor structure including a source/drain region located in a substrate, a gate located over the source/drain region and a dielectric spacer located over the source/drain region and adjacent to the gate;

implanting a semiconductor material into upper surfaces of the gate, the dielectric spacer, and the source/drain region;

depositing a refractory metal over the implanted semiconductor material; and

reacting the refractory metal with the implanted semiconductor material, thereby forming a continuous metal silicide strap at the upper surfaces of the gate, the dielectric spacer and the source/drain region.

- 2. The method of Claim 1, wherein the step of implanting a semiconductor material comprises implanting silicon.
- 3. The method of Claim 1, wherein the step of depositing a refractory metal comprises sputter depositing cobalt.
- 4. The method of Claim 1, wherein the step of reacting the refractory metal comprises annealing at a temperature of 800°C or greater.

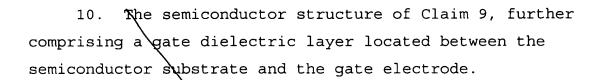
steps of:

forming a silicon-blocking layer over the semiconductor structure;

patterning the silicon blocking layer to form an opening which exposes a portion of the gate, the dielectric spacer and a portion of the source/drain region; and

implanting the semiconductor material through the opening.

- 6. The method of Claim 5, wherein the implanting step is performed at an angle with respect to the opening.
- 7. The method of Claim 5, wherein the refractory metal is deposited over the patterned silicon blocking layer and into the opening.
 - 8. A semiconductor structure comprising
 - a semiconductor substrate;
 - a conductive element located over the semiconductor substrate;
 - a dielectric spacer located adjacent to a sidewall of the conductive element; and
 - a continuous silicide strap located over the conductive element, the dielectric spacer and the semiconductor substrate.
- 9. The semiconductor structure of Claim 8, wherein the conductive element is a gate electrode.



- 11. The semiconductor structure of Claim 9, further comprising a source/drain region located in the semiconductor substrate, wherein the strap contacts the source/drain region.
- 12. The semiconductor structure of Claim 9, wherein the gate comprises conductively doped polycrystalline silicon.
- 13. The semiconductor structure of Claim 8, wherein the dielectric spacer comprises silicon oxide or silicon nitride.
- 14. The semiconductor structure of Chaim 8, wherein the dielectric spacer is silicon-rich.
- 15. The semiconductor structure of Claim 8 wherein the silicide strap comprises cobalt silicide.

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